METHODS AND APPARATUS FOR SUPPORTING AND IMPLEMENTING COMPUTER BASED ANIMATION

ABSTRACT

5   The present invention provides a method for hierarchically decomposing

a visual or audio object within an animation into plurality of objects which can

be individually edited to achieve particular animation effects. For example, a

graphical object may be decomposed into a plurality of graphical sub-objects,

each of which is inherits an anchor point from the original object, or is given an

10   original anchor point distinct from the original object. Each sub-object also

includes a relative position for the sub-object relative to the anchor point. The

path of the anchor point is combined with relative positions of the sub-objects to

produce an animation for the object as a whole. This decomposition technique

can greatly increase computational efficiency of an animation. It also provides

15   for inheritance of attributes between objects and descendent sub-objects. The

objects may support functions, or behaviors, such as morphing or motion

blurring. The present invention additionally provides a flexible grouping

operation to facilitate modifications to a group of objects. When a first type of

modification is made to an attribute of an object in a group, this change is

20   applied to corresponding attributes of other objects in the group. When a

second type of modification is made to an attribute of an object in a group, the

change only applies to the selected object or objects, and not to other objects in

the group. The present invention allows objects to be manipulated on servers
which are connected to a display via the Internet.